

REMARKS

Applicant has amended claims 1, 12, 56, 57, 59, 60, 62, 65, 66, 67, 68, 69, 77, 84, and 92 and has added new dependent claims 99-128 as set forth above. No new matter has been added by way of these amendments. In view of the above amendments and the following remarks, reconsideration of the outstanding office action is respectfully requested.

The Office has rejected claims 1-2, 5-6, 8, 12, 15-16, 18, 68-70, 72-73, 77, 79-80, 92, 95 under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 5,859,870 Tsujimoto (Tsujimoto), claims 3, 10, 14, 20, 57-59, 62, 66, 71, 75, 78, 82, 97 under 35 U.S.C. 103(a) as being unpatentable over Tsujimoto, claims 4, 13, 93-94 under 35 U.S.C. 103(a) as being unpatentable over Tsujimoto, further in view of US Patent No. 5,687,196 to Proctor, Jr. et al (Proctor) and US Patent Publication No. 2005/0008065 to Schilling (Schilling), claims 7, 11, 17, 21, 60, 67, 74, 76, 81, 83, 96, 98 under 35 U.S.C. 103(a) as being unpatentable over Tsujimoto, and further in view of US Patent No. 6, 385,237 to Tsui et al (Tsui), claims 9, 19, 65, 84-86, 88, 90 under 35 U.S.C. 103(a) as being unpatentable over Tsujimoto, and further in view of the Applicant's disclosure on page 1, lines 8-13, claim 56 under 35 U.S.C. 103(a) as being unpatentable over Tsujimoto, and further in view of Proctor, claim 87 under 35 U.S.C. 103(a) as being unpatentable over Tsujimoto in view of Applicant's disclosure on page 1, lines 8-13, and further in view of Proctor and Schilling, and claim 89, 91 under 35 U.S.C. 103(a) as being unpatentable over Tsujimoto in view of Applicant's disclosure on page 1, lines 8-13 and further in view of Tsui.

The Office asserts that Tsujimoto discloses: a modulator/demodulator system comprising a transmission system, which applies one of a plurality of time scales (Fig. 3a, means 303) and one of a plurality of time delays (Fig. 3a, means 101) to one of a pair of substantially matched base signals (Fig. 3a, Data Symbol Sequence an), combines the time scaled and time delayed base signal with the other one of the pair of base signals to form a doublet (Fig. 3a, means 104), and transmits the doublet signal (Fig. 3a, means 305-306); and a receiving system which receives the doublet and extracts information from the doublet based on the one of the plurality of time scales and the one of the plurality of time delays which were applied (Fig. 31), means 110 and 312).

Tsujimoto, Proctor, Schilling, Tsui, and Applicant's disclosure on page 1, lines 8-13, alone or in combination, do not disclose or suggest, "a transmission system which applies one of a plurality of time scales and one of a plurality of time delays to one of a pair

of substantially matched base signals” as recited in claim 1, “applying one of a plurality of time scales and one of a plurality of time delays to one of a pair of substantially matched base signals” as recited in claim 12, “a processing system which extracts the information from the doublet based on one of a plurality of time scales which was applied to the doublet prior to transmission; wherein the receiver further comprises a device that time scales a received signal from the doublet by the time scale that was applied to form a time scaled version of the received signal, a correlator that correlates the received signal with the time scaled version of the received signal to form a time delay correlation signal” as recited in claim 56, “a processing system which extracts the information from the doublet based on one of a plurality of time scales which was applied to the doublet prior to transmission;-wherein the receiver receives a plurality of the doublets in a composite signal and the processing system extracts the information from the composite signal based on the one of the plurality of time scales which was applied to each of the doublets” as recited in claim 57, “a processing system which extracts the information from the doublet based on one of a plurality of time scales which was applied to the doublet prior to transmission . . . a time scaling device which applies at least one of the plurality of time scales to each of the received segments to form time scaled signal segments . . . a multiplier which multiplies each of the time scaled signal segments with each of the time delayed signal segments to form multiplied signals . . . an integrator which integrates the multiplied signals across time to form detection signals, the processing system comparing the detection signals at different ones of the plurality of time scales and different ones of the plurality of time delays over time to determine the applied one of the plurality of time scales and the applied one of the plurality of time delays to extract the information from the detection signal” as recited in claim 59, “a processing system which extracts the information from the doublet based on one of a plurality of time scales which was applied to the doublet prior to transmission” as recited in claim 60, “extracting information from the composite signal based on one of a plurality of time scales which was applied to each of the doublets” as recited in claim 62, “extracting information from the composite signal based on one of a plurality of time scales which was applied to each of the doublets” as recited in claim 65, “extracting information from the doublet based on one of a plurality of time scales which was applied to the doublet” as recited in claim 67, “extracting information from one of the pair of substantially matched base signals in the doublet based on one of a plurality of time scales which was applied to the doublet” as recited in claim 68, “a transmission system embeds communication information by applying one of a plurality of

time scales and one of a plurality of time delays to one of a pair of substantially matched base signals, combines the time scaled and time delayed base signal with the other one of the pair of base signals to form a doublet, and transmits the doublet” as recited in claim 69, “applying one of a plurality of time scales and one of a plurality of time delays to one of a pair of substantially matched base signals to embed communication information” as recited in claim 77, “a transmission system which applies one of a plurality of time scales and one of a plurality of time delays to one of a pair of substantially matched base signals, combines the time scaled and time delayed base signal with the other one of the pair of base signals to form a doublet, and transmits the doublet into an environment which embeds imaging information in the doublet” as recited in claim 84, or “applying one of a plurality of time scales and one of a plurality of time delays to one of a pair of substantially matched base signals . . . combining the time scaled and time delayed base signal with the other one of the pair of base signals to form a doublet” as recited in claim 92.

Contrary to the Office’s assertion, even under the broadest reasonable interpretation, one of ordinary skill in the art would not recognize that when a signal is subjected to spreading the bandwidth as disclosed in Tsujimoto the signal is expanded (e.g. time duration is compressed) that this is time scaling. The Office is confusing "time resolution" and "time scaling." A wide bandwidth signal (spread spectrum) does have a compressed time resolution (the temporal resolution of a signal is inversely proportional to its bandwidth), however compressing the time resolution of a signal is not time-scaling.

Again, as set forth in Applicant’s prior response the means 303 in FIG. 3(a) in Tsujimoto does not disclose or suggest modulator/demodulator system comprising a transmission system, which applies one of a plurality of time scales (Fig. 3a, means 303). The Office’s attention is respectfully directed to FIG. 3(a) and also to col. 4, lines 15 -21 in Tsujimoto which states, “the pair of outputs of modulators 102 . . . are supplied to a pair of spread spectrum signal generators 303 employing mutually different pseudo-noise code sequences for code division multiplexing” (Emphasis added). Accordingly, the means 303 cited by the Office is for code division multiplexing, not time scaling. Additionally, there is no other teaching or suggestion of any time scaling in Tsujimoto. Further, the Office is respectfully requested to reconsider the detailed explanation set forth in the previously submitted declaration of Randy Young, which clearly explains why time-scaling can not be realized with the spread spectrum signal generators disclosed in Tsujimoto. Like Tsujimoto,

Proctor, Schilling, Tsui, and Applicant's disclosure on page 1, lines 8-13, cited by the Office, also do not disclose or suggest time scaling as claimed.

As discussed at page 9, line 29 to page 10, line 3, in the above-identified patent application, "The present invention's added parameter of time-scale offset is easy and efficient to implement, and it adds a whole new dimension for embedding/extracting information and maintaining signal security. The time-scale offset also enables controllable spatial resolution for enhanced performance in extracting environmental information. By simultaneously employing multiple time-scale offsets in the same transmission, the system can simultaneously achieve extreme robustness and high resolution in range, angles and velocity." Additionally, as discussed at page 10, lines 14-16 in the above-identified patent application, "The time-scale offset of this invention is further exploited to achieve accurate and precise range/angle/velocity estimates for probing/imaging applications."

Accordingly, in view of the foregoing remarks, the Office is respectfully requested to reconsider and withdraw the rejection of claims 1, 12, 56, 57, 59, 60, 62, 65-69, 77, 84, and 92. Since claims 2-11 depend from and contain the limitations of claim 1, claims 13-21 depend from and contain the limitations of claim 12, claim 58 depends from and contains the limitations of claim 56, claims 70-76 depend from and contain the limitations of claim 69, claims 78-83 depend from and contain the limitations of claim 77, claims 85-91 depend from and contain the limitations of claim 84, and claims 93-98 depend from and contain the limitations of claim 92, they are distinguishable over the cited references and patentable in the same manner as claims 1, 12, 56, 69, 77, 84, and 92.

Additionally, Tsujimoto, Proctor, Schilling, Tsui, and Applicant's disclosure on page 1, lines 8-13, alone or in combination, do not disclose or suggest, "wherein the applied one of the plurality of time scales is less than one" as set forth in claims 1, 12, 56, 57, 59, 60, 62, 65, 66, 67, 68, 69, 77, 84, and 92. Again, the Office's attention is respectfully directed to FIG. 3(a) and also to col. 4, lines 15 -21 in Tsujimoto which states, "the pair of outputs of modulators 102 . . . are supplied to a pair of spread spectrum signal generators 303." Spread spectrum signal generators can only spread or widen the spectrum and thus simply could not realize time-scaling where the applied one of the plurality of time scales is less than one and the duration of the signal is increased (spread), while the spectrum of the signal is compressed (scale is less than one). Similarly, the other cited references do not teach or suggest having the applied one of the plurality of time scales be less than one.

Accordingly, in view of the foregoing remarks, the Office is respectfully requested to reconsider and withdraw the rejection of claims 1, 12, 56, 57, 59, 60, 62, 65-69, 77, 84, and 92. Since claims 2-11 depend from and contain the limitations of claim 1, claims 13-21 depend from and contain the limitations of claim 12, claim 58 depends from and contains the limitations of claim 56, claims 70-76 depend from and contain the limitations of claim 69, claims 78-83 depend from and contain the limitations of claim 77, claims 85-91 depend from and contain the limitations of claim 84, and claims 93-98 depend from and contain the limitations of claim 92, they are distinguishable over the cited references and patentable in the same manner as claims 1, 12, 56, 69, 77, 84, and 92.

Applicant has also added new dependent claims 99-128 which are distinguishable over the cited references and are believed to be in condition for allowance. As set forth above, none of the cited references teaches or suggest time scaling as claimed, let alone time scaling without spread spectrum modulation as claimed. Additionally, none of the cited references teach or suggest that the time scaled and time delayed base signal and the other one of the pair of base signals which are combined into the doublet are substantially matched in frequency. Accordingly, these claims are believed to be in condition for allowance and notice to that effect is respectfully requested.

In view of all of the foregoing, Applicant submits that this case is in condition for allowance and such allowance is earnestly solicited.

Respectfully submitted,

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